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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/528,788	03/17/2000	Ruediger Paschotta	FREIP030US	5723

21121 7590 12/03/2001  
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EXAMINER

RODRIGUEZ, ARMANDO

ART UNIT PAPER NUMBER

2877

DATE MAILED: 12/03/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/528,788

Applicant(s)

PASCHOTTA ET AL.

Examiner

Armando Rodriguez

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-17, 22-24, 26-31 and 36 is/are rejected.
- 7) ☒ Claim(s) 14, 18-21, 25 and 32-35 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Examiner is unclear as to the structure used for cavity dumping.

Claim 36 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant is combining a method of claim 36 with the apparatus of claim 1.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-13, 15-17, 22-24 and 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kasamatsu et al (Applied Optics, Laser-diode-pumped Nd:YAG active mirror laser) in view of Weingarten et al (5,987,049).

Regarding limitations of claims 1-5,9,10-12,13,15,18,22-24 and 26.

Kasamatsu et al illustrates in figure 1 an optical resonator having a Nd:YAG thin disk gain medium where one face is cooled by a heat sink and the other face is excited for emitting electromagnetic radiation. One of the faces of the gain medium has a reflective coating

Kasamatsu et al fails to disclose means passive mode locking and means for introducing negative dispersion.

Weingarten et al illustrates in figure 4 a semiconductor saturable absorber (11) for passive mode locking of the resonator and a pair of prism (16,17) for dispersion compensation. Weingarten et al also discloses the mode locking capabilities of a kerr lens (column 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the saturable absorber and pair of prisms of Weingarten et al in the device of Kasamatsu because it would provide passive mode locking and dispersion compensation of the laser system, as both techniques are well known in the laser art.

Regarding claims 6 and 28

Kasamatsu and applicant disclose a 2mm thick gain medium.

Therefore it would be obvious for both gain mediums to support short pulses.

Regarding claims 7,8 and 29,30

Kasamatsu et al illustrates in figure 1, a laser device having a rear mirror and an output coupler having a reflectivity of 90,95,98,99%.

Therefore, it would obvious for the gain medium to be hit more than two times by the electromagnetic radiation.

Regarding claims 17 and 31

Examiner takes official notice of the use of a means for Q-switch mode locking. Q-switch mode locking is a very well known and commonly used technique in the laser art.

***Allowable Subject Matter***

Claims 14,18-21,25 and 32-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 14 and 25.

None of the prior arts alone or in combination discloses optical resonator of independent claims 1 and 22 along with the limitations of claims 14 and 25 having a radiation repetition rate lower than 100MHz and 50 MHz.

Regarding claims 18-21 and 32-35

None of the prior arts alone or in combination discloses optical resonator of independent claims 1 and 22 along with the limitations of claims 18 and 32 where the laser system has means for frequency conversion.

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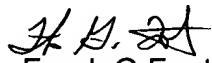
**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Armando Rodriguez whose telephone number is (703) 308-6218. The examiner can normally be reached on 10-hour day / M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (703) 308-4881. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
Armando Rodriguez  
Examiner  
Art Unit 2877

  
Frank G Font  
Superviosr  
Art Unit 2877

AR/FGF  
November 18, 2001